

(21) Application No 8802501.0

(22) Date of filing 04.02.1988

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(51) INT CL<sup>4</sup>  
H04R 27/00

(52) UK CL (Edition J)

G4N NDAX

U1S S2189 S2207

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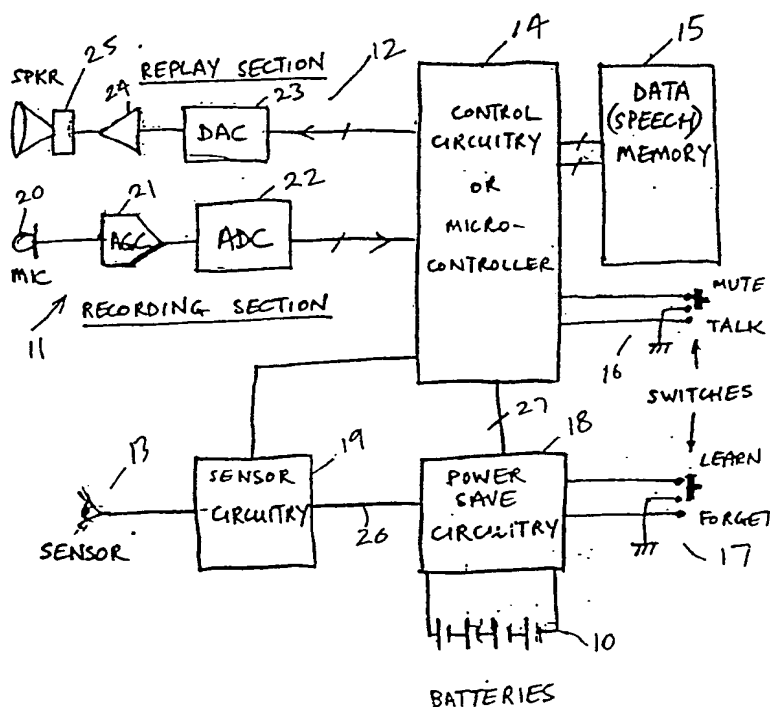
(58) Field of search

UK CL (Edition J) G4N NDAS NDAX NFFX NPPX,  
H4R

INT CL<sup>4</sup> H04R

#### (54) Message apparatus

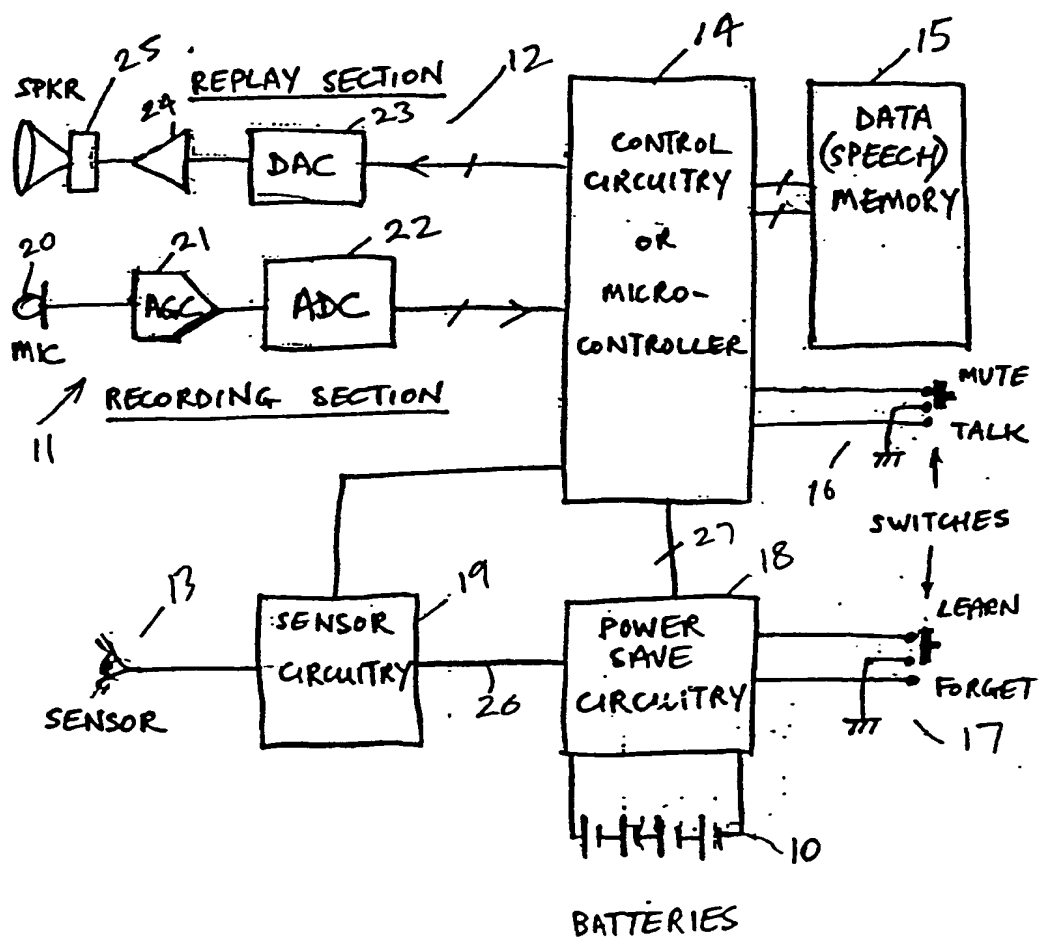
(57) The message apparatus reproduces a pre-recorded audible announcement whenever it detects the approach of a person and includes a convenient battery-powered solid-state recording and replaying electronic circuit employing means 11, 12 for digitising and reconstructing e.g. a voice message, and also storing the digitised form of a message on electronic semiconductor memory 15. A sensor 13 and associated circuitry 19 activates the replaying of a message whenever the approach of a person is detected by the sensor. Provision is made 18 within the design of the electronic circuitry for minimising the power drain on the batteries 10 whilst the apparatus is in the quiescent state. Provision may also be made for recording messages directly into the apparatus using an integral microphone 20 and associated input circuitry 21, 22.



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MESSAGE APPARATUS

DESCRIPTION

5       This invention relates to a message recording and  
replaying apparatus which may conveniently be portable.

It is known to provide such an apparatus which includes  
a solid state memory into which a short message can be  
10       recorded and subsequently replayed by actuation of a  
replay switch.

The present invention seeks to provide an improved  
message recording and replaying apparatus and comprises  
15       transducer means for producing electrical signals in  
response to an audibly announced message, solid state  
memory means, input circuit means responsive to said  
electrical signals to store in said solid state memory  
means signals as a function of said message, output  
20       means responsive to said signals stored in the memory  
means to produce an audible announcement of said  
message and proximity detector means responsive to a  
person approaching the apparatus and operative to cause

operation of the output means whereby to produce an audible announcement of said message.

Thus, in accordance with the invention, the apparatus provides a replay of the message when it detects a person or persons approaching. There may also be provided a means whereby the message may be erased and a new message recorded in its place. Conveniently the apparatus can be portable.

The apparatus does not utilise tape or other moving recording media but instead uses storage in electronic semi-conductor memory elements. Conveniently such elements are digital elements and in order to make use of such digital storage, the signals produced by the transducer means are first converted into an equivalent digital form for being recorded into the solid state memory means. Similarly, the output means includes conversion means to convert the digital signals into analogue form. Conveniently, the output means includes a loudspeaker to produce the announcement of the recorded message.

Conveniently the transducer means comprises an electret microphone. The input means may include an automatic gain control circuit.

5 The apparatus is conveniently battery powered and may include power saving circuitry responsive to the proximity detection means for disabling at least a major part of the apparatus during a period when a person is detected not to be proximate thereto.

10

In order that the invention may be more fully understood an illustrative example thereof will now be described with reference to the single Figure of the accompanying drawings which shows in block diagrammatic  
15 form the electric circuits of the apparatus.

15

The apparatus is housed in a small portable box typically 15 x 5 x 2 cm and is powered by batteries 10. Messages are recorded in the apparatus by means of a  
20 recording section 11 and are subsequently replayed by a replay section 12. The replay section is controlled by a proximity sensor 13. The recording section 11, replay section 12 and sensor 13 are connected to control circuitry 14, typically in the form of a

microprocessor which is also connected to a solid state memory 15 into which the message is recorded.

5 The apparatus is controlled by a MUTE/TALK switch 16 and a LEARN/FORGET switch 17.

10 Power save circuitry 18 is arranged to shut down the apparatus, except for sensor circuitry 19 during periods when no person is detected to be proximate to the apparatus by the sensor 13.

15 Considering now the recording section in more detail, it consists of an electret microphone 20 which feeds electrical signals through an automatic gain control circuit 21 to an analog to digital convertor 22 the output of which is fed to the control circuitry 14 for recordal in the solid state memory 15.

20 Considering now the replay section, digital signals retrieved from the memory 15 are fed under the control of circuitry 14 to a digital to analog convertor 23 and the resulting analog signal is amplified by amplifier 24 and fed to loudspeaker 25.

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Considering now the sensor 13, this is arranged to provide a signal indicative of the approach of a person or persons. Conveniently, the sensor 13 comprises an infrared detector connected into a circuit which using  
5 signals from the control circuitry 14, tests every few seconds whether a person is approaching. If a person is detected, a signal is provided on line 26 to the power save circuitry in order to power up the system through line 27 so that a recorded message can be  
10 replayed through the replay section 12.

Considering now the switches 16, 17 these are conveniently two-position slide switches arranged on one of the longer sides of the box of the apparatus.  
15

The normal procedure to operate the apparatus is as follows:

1. When not in use the LEARN/FORGET switch will  
20 normally be left in the FORGET position to clear its memory and conserve its batteries.

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2. Switch the LEARN/FORGET switch 17 to LEARN. (If it is already in LEARN then switch to FORGET and then back to LEARN).

5 3. Immediately begin speaking the desired message into the microphone 20.

4. At the end of the recording of the message, flip the MUTE/TALK switch 16 (either way will do).

10

5. If the available recording time is exceeded before the end of the message, a short bleep will be heard from the loudspeaker 25 to warn that the message may be truncated. If it has been, repeat the recording process from step 2.

15

6. The recorded message may now be replayed by ensuring that the MUTE/TALK switch 16 is in the TALK position and that the Person Detector is triggered.

20

7. The recorded message is retained until the switch 17 is moved to FORGET.



8. In the MUTE position the stored message is not announced.

9. In the TALK position of switch 16, the message  
5 will be replayed whenever a person is detected. If a person continues to be detected, a silent period of several seconds occurs between successive replays of the message.

10 Thus, a message may be recorded into the memory 15 by the use of the microphone 20 and subsequently replayed automatically when a person, detected by sensor 13 approaches.

15 It will be appreciated that the use of a solid state memory e.g. CMOS or other suitable digital form has the advantage over a conventional tape recorder of no moving parts and so the apparatus can be conveniently embodied in a simple, small box. The proximity  
20 detector 13 provides an entirely automatic operation.

Whilst the sensor 13 has been described as an infra-red sensor it will be appreciated that other forms of

proximity detector could be utilised for example  
microwave doppler or sonic doppler.

5 Also, the apparatus could be modified to include an  
audio output connector for connection to an  
amplification system to increase the sound volume of  
the audio message.

10 Also, the basic mode of operation could be altered so  
that when a person is detected, the device records the  
sounds in its vicinity in such a manner that they can  
be replayed later by the same or a different person.  
This feature would enable the apparatus to be used as a  
means of recording an intruder in a premises.

15 Also, a communications interface circuit could be  
provided which would operate optionally in place of the  
proximity sensor 13. The apparatus could thus be  
connected to a telephone or other unattended  
20 communication station so as to replay an announcement  
that was previously recorded on the same or another  
such apparatus.

Further, it would be possible to elaborate the apparatus so as to provide a multi-channel system comprised of several circuit boards of the kind shown in the single Figure of the drawings connected to a multi-channelled communication station and operating under the control of a "master" microcomputer which would organise the timing of the announcement replays such that each listener would hear the message or announcement starting from the beginning. Thus, the system could provide an improved telephone message system e.g. for announcing the weather, cricket scores or the like wherein each person telephoning the system would immediately be provided with a message starting at its beginning provided by an individual one of the circuit boards. This contrasts with the prior art arrangement which use a single tape recording that plays in a continuous loop and thus the person telephoning starts to listen to the loop, usually at a position not at the beginning.

Further, it is envisaged that the apparatus shown in the Figure has application to domestic message announcing, advertising promotion, retail uses, exhibitions, displays, security, office message

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announcing, industrial safety, toys, educational uses, for use as a personal reminder device, use instead of a steward, usher or commissionaire, entry systems, and messaging for blind people.

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CLAIMS.

1. A message replaying apparatus comprising solid-state memory means for storing signals as a function of a message, output means responsive to said signals stored in the memory means to produce an audible announcement of said message and a proximity detector means responsive to any person approaching the apparatus and operative to cause operation of the output means whereby to produce an audible announcement of said message.

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